

CLAIMS

1. A method for surface treatment comprising the steps of :
cleaning a surface of an object to be processed by using ClF₃
5 gas; and
removing chlorine derived from the ClF₃ gas still remaining on
the surface of the object under treatment even after the step of
cleaning the surface.
- 10 2. A method for surface treatment according to claim 1 wherein
the step of removing chlorine includes a step of removing chlorine from
the surface of the object to be processed by using a reducing gas.
- 15 3. A method for surface treatment according to claim 2 wherein
the reducing gas is H₂ gas.
4. A method for surface treatment comprising the steps of:
making ClF₃ gas adhere to a surface of an object to be
processed
20 by supplying the ClF₃ gas to the surface of the object to be processed;
interrupting the supply of the ClF₃ gas to the surface of the
object to be processed; and
cleaning the surface of the object to be processed by using the
ClF₃ gas adhering to the surface of the object to be processed.
- 25 5. A method for surface treatment according to claim 4 wherein
the object to be processed is cooled to 20 °C or below in the step of
making
ClF₃ gas adhere to the surface of the object.
- 30 6. An apparatus for surface treatment comprising:
a processing vessel in which a object to be processed is placed;
a means for supplying ClF₃ gas into the processing vessel;
a means for activating the ClF₃ gas supplied in the processing
35 vessel; and
a means for supplying a reducing gas into the processing
vessel.

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7. An apparatus for surface treatment comprising:
a processing vessel in which a object to be processed is placed;
a means for supplying ClF₃ gas into the processing vessel;
5 a means for promoting adhesion of ClF₃ gas to the object to be
processed; and
a means for activating ClF₃ gas supplied in the processing
vessel.
- 10 8. An apparatus for surface treatment according to claim 7 further
comprising a mount located in the processing vessel to set the object to
be processed thereon.
- 15 9. An apparatus for surface treatment according to claim 8
wherein the means for promoting adhesion of the ClF₃ gas to the object
to be processed is provided in the mount to function to cool the object
to be processed on the mount.
- 20 10. An apparatus for surface treatment according to claim 9
wherein the means for activating the ClF₃ gas heats the object to be
processed in a heating position distant from the object setting position
for setting the object on the mount.
- 25 11. An apparatus for surface treatment according to claim 10
further comprising a means for elevating and lowering the object to be
processed between the object setting position and the heating position.
- 30 12. A cluster device comprising:
the apparatus for surface treatment according to any one of
claims 6 through 11;
a transport chamber capable of maintaining a non-reactive
atmosphere inside and capable of transporting a object to be processed
in the non-reactive atmosphere to and from the surface processing
apparatus; and
- 35 one or more processing apparatuses capable of transporting the
object to be processed to and from the transport chamber.

13. The cluster device according to claim 12 wherein the apparatus for surface treatment is a metal wiring formation chambers for making metal wiring on the object to be processed.

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